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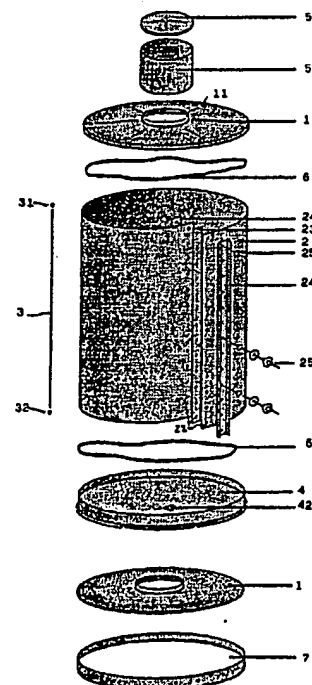
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(21) International Application Number: PCT/EP92/01305 (22) International Filing Date: 11 June 1992 (11.06.92) (30) Priority data: UD91A000101 18 June 1991 (18.06.91) IT UD91U000001 9 January 1992 (09.01.92) IT (71) Applicant (for all designated States except US): CETTE ENGINEERING UND BETEILIGUNGSGESELLSCHAFT MBH[AT/AT]; Villacher Ring 59, A-9020 Klagenufurt (AT). (72) Inventor; and (75) Inventor/Applicant (for US only): BORGNOLO, Giampietro [IT/IT]; Via Tarvisio, 20, I-33100 Udine (IT). (74) Agent: D'AGOSTINI, Giovanni; D'Agostini Organizzazione, Via G. Giusti 17, I-33100 Udine (IT).		(81) Designated States: AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH (European patent), CI (OAPI patent), CM (OAPI patent), CS, DE (European patent), DK (European patent), ES (European patent), FI, FR (European patent), GA (OAPI patent), GB (European patent), GN (OAPI patent), GR (European patent), HU, IT (European patent), JP, KP, KR, LK, LU (European patent), MC (European patent), MG, ML (OAPI patent), MR (OAPI patent), MW, NL (European patent), NO, PL, RO, RU, SD, SE (European patent), SN (OAPI patent), TD (OAPI patent), TG (OAPI patent), US. Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	

(54) Title: **MODULAR CYLINDRIC CONTAINER**

(57) Abstract

A cylindric container composed of some modular elements, characterized in that these consist in: a flexible sheet of a form substantially rectangular (2) that has the perimetrical dimensions of the lateral surface of the cylindric container that we must make, having two opposite joining edges, corresponding substantially with the height of the perimetrical surface of the cylinder and their distance apart is substantially equal to the length of the development of the base cylinder of the container that we must realize; a sealing means to tightly join the said two opposite edges (23, 24) to provide said sheet (2) with a substantially cylindric conformation to form the mantle of the container; two opposite closure means to close the said cylinder as a cover (1) and base constituting the bottom of the container (4).



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1 the container that we must realize;

2 - means to join together said two opposite edges to provide the said sheet with
3 a substantially cylindric conformation;
4 - two opposite closure means to close the said cylinder which serve as a
5 cover and base.

6 With this solution one realizes a cylindric container that can be
7 supplied in disassembled elements, easily transportable with little encumber,
8 being able to carry out the assembly with sealing means and corresponding
9 clamping means, not to exclude the glueing solution, making possible the
10 realization of a cylindric container with disassembled elements of strongly
11 reduced encumber that can be easily handled.

12 Advantageously for reinforcement or disassemble functions some
13 tensors as tie rods are provided to clamp by tightening said closure means
14 that are duly endowed with flanging holes to be clamped in a opposite by said
15 tensors.

16 With this solution one improves the system of clamping and tightening,
17 and one strengthens the structural system of the obtained container (for
18 example large or small cylindric tanks).

19 Advantageously to reinforce the lateral surface (mantle) we can
20 provide some external rings or spiral reinforcement that consent the mantle
21 to maintain the circular form and strengthen the perimetrical surface against
22 the hydrostatic push-force of the contents also utilizing sheets with a reduced
23 thickness in order to have the requested elastical flexibility from the flat
24 sheet form to the curved sheet cylinder form .

25 Also, advantageously both the cover and the bottom have a flange
26 orientated annular conformation towards the mantle for upper and lower
27 overlapping on the cylindric conformation already prearranged of the sheet
28 constituting the same mantle.

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1 Advantageously said modular cylindric container is characterized in that:

- 2 • the said rectangular sheet is a flat sheet without angle implications at the
3 respective joint edges in the cylindric containing form;
4 • said edges are holed;
5 • the respective connection in the cylindric form is made by a sealing together
6 the said edges and by means of bolts with the help of the profile which has the
7 corresponding holes respectively at the interior and exterior.

8 With this solution we have the advantage to have completely flat sheets
9 with a minor encumber and a minor working cost.

10 The watertightness is assured by the intermediate sealing and the
11 mechanical tightness is assured by the friction force between the contact
12 surfaces in the clamping of the bolts.

13 In order to assure a minor external tension force of assembled
14 cylindric containers, the sheets are already made slightly curved.

15 In this way if one increases the encumber of the same for the
16 respective camber of the curving, we obtain the advantage of reducing the
17 stress in making the cylindric form and doing this without having any
18 problem to pile them, inasmuch that the sheets even if slightly curved can
19 equally be stacked.

20 In such a way we obtain the advantage of furthermore structuring in a
21 optimally way the reinforced ensemble of the obtained container, assuring it
22 furthermore the sealing of the respective joints.

23 These and other advantages will appear in the specified successive
24 preferential solution description of realization with the help of the enclosed
25 drawings of which execution details are not to be considered limitative but
26 only for exemplification.

27 Figure 1 represents a perspective schematic view of a mounted cylindric
28 container;

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1 The Figures from 2 to 5 represent the disassembled elements that form the
2 container.

3 Figure 1A is an enlarged view of the container according to this present model.
4 Figure 2A represents in perspective view the packing method of the sheets
5 that will realize the covering of the container.

6 Making reference to the Figures it is disclosed that the container
7 includes:

- 8 - a flexible sheet of a substantially rectangular form (2) of the perimetrical
9 dimensions of the lateral surface of the cylindric container that we must
10 make, having two opposite angled edges (21), corresponding substantially
11 with the height of the perimetrical surface of the cylinder and their distance
12 apart is equal substantially to the length of the development of the base
13 cylinder of the container that we must realize;
- 14 - sealing means (23 24) to join said two opposite edges to provide the said
15 sheet substantially with a cylindric conformation;
- 16 - two closure means substantially with a disc-like shape (1,4) to supply the
17 said cylinder a base (4) and a cover (1) endowed with a holed flange (41);
- 18 - a tie rods ensemble (3,31) to clamp by means of tightening said closure
19 means (14) for the formation of the required cylindric container.

20 Advantageously the cover can be substantially big and also modular and
21 can have other convenient devices as an overflow, etc. (5).

22 Also, advantageously said joint means of the edges of the perimetrical
23 sheet can be supplied with seals for tightening (23) and a sheath for clamping
24 (24) with the assistance also of a screw means.

25 The cover and the basis have also tightening seals (6).

26 The material conveniently used is a reinforced fiber-glass plastic
27 material that is polyester resin reinforced by fiber glass and the like.

28 In these forms of exhibit only some of the possible solutions are

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1 represented, in practice these can vary in a ambit much vaster even if not
2 described in the limits of what was previously enunciated and what is
3 hereafter claimed.

4 Making reference to the Figures 1A and 2A these disclose that:

- 5 • the rectangular sheet 2 is flat with holed joint edges;
- 6 • for the tight one, use seal 23;
- 7 • the clamping is made with bolts 25 by means of interior and external
- 8 profiles 241,242;
- 9 • to the basis we can apply for screwing some discharge openings, 251;
- 10 • the cover 1 can be with or without the prominence 5 of the substantially
- 11 large plug ;
- 12 • the perimetrical holes 11 in the cover 1 have been made for the clamping of
- 13 the same and the bottom 4 with the tie rods 3 31 32;
- 14 • both the cover 1 and the bottom 4 are clamped with seal 6;
- 15 • the bottom 4 has a hole at the deposit discharge basis for decantation and
- 16 washing 42.
- 17 • the ensemble provides some cylindrical bands for reinforcement 7 that can
- 18 be inserted both to the basis and to the top.

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Claims

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1. A Cylindric Container composed of some modular elements, characterized in that these consist in:

- a flexible sheet of a form substantially rectangular (2) that has the perimetrical dimensions of the lateral surface of the cylindric container that we must make, having two opposite joining edges, corresponding substantially with the height of the perimetrical surface of the cylinder and their distance apart is substantially equal to the length of the development of the base cylinder of the container that we must realize;

- a sealing means to tightly join the said two opposite edges (23 24) to provide said sheet (2) with a substantially cylindric conformation to form the mantle of the container;

- two opposite closure means to close the said cylinder as a cover (1) and base constituting the bottom of the container (4).

2. A container according to claim 1, characterized in that it has furthermore a tie rods ensemble (3 31) to clamp longitudinally and peripherically, by means of tightening said closure means (1,4), being these last endowed with a protruding flanging (11 41) for the insertion and tightening of said tie rods (3 31).

3. A container according to claim 1, characterized in that it has furthermore an ensemble of sealing rings to clamp annularly and peripherically the said sheet after it is cylindrically conformed as mantle of the container (2).

4. A container according to claim 1, characterized in that it has furthermore some spiral reinforcements to clamp annularly and

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1 peripherically the said sheet after it is cylindrically conformed as mantle of
2 the container (2).

3

4 5. A container according to claim 1, characterized in that the means to
5 join tightly said two opposite edges (23 24) of the said sheet (2) in a
6 cylindric conformation, consist substantially in a tightening means with a
7 sealing means and clamping means for screwing.

8

9 6. A container according to claim 1, characterized in that the means to
10 join tightly said two opposit edges (23 24) of the said sheet (2)
11 substantially in a cylindric conformation, consist substantially in a glueing
12 means.

13

14 7. A container according to claim 1, characterized in that the means to
15 join tightly the opposite edges of the upper and lower bases of the said sheet
16 (2) substantially cylindrically, conformed on the respective cover (1) and
17 base bottom (4), consist substantially in a glueing means.

18

19 8. A container according to claim 1, characterized in that the said
20 cover (1) has an annular flange conformation oriented downwards to overlap
21 on the upper cylindric conformation already prearranged of the said sheet
22 (2).

23

24 9. A container according to claim 1, characterized in that said base (4)
25 has an annular flange conformation oriented upwards to overlap on the basis
26 of the cylindric conformation already prearranged of the said sheet (2).

27

28 10. A container according to claim 1, characterized in that the said

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1 sheet is made in a plastic material.

2

3 11. A container according to claim 1, characterized in that the said
4 sheet is made in a reinforced plastic material.

5

6 12. A container according to claim 1, characterized in that the said
7 sheet is made in a plastic material reinforced by fiber glass .

8

9 13. A container according to claim 1, characterized in that the said
10 sheet is made in polyester resin reinforced by fiber glass .

11

12 14. A container according to claim 1, characterized in that the bottom
13 and said cover are made in plastic material.

14

15 15. A container according to claim 1, characterized in that the bottom
16 and the said cover are made in a reinforced plastic material.

17

18 16. A container according to claim 1, characterized in that the bottom
19 and the said cover are made in a plastic material reinforced by fiber glass.

20

21 17. A container according to claim 1, characterized in that the bottom
22 and the said cover are made in polyester resin reinforced by fiber glass.

23

24 18. A Container as claimed in claim 1, characterized in that:

25 • the said rectangular sheet (2) is a flat sheet without angle implications at
26 the respective joint edges in the cylindric containing form;

27 • said edges are holed (22);

28 • the respective connection in the cylindric form is made by matching and

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1 sealing said holed edges (22) and by means of bolts (23) with the help of the
2 profiles which are holed correspondingly on the respective interior (241)
3 and exterior (242).

4

5 19. A container according to claim 1 and 18, characterized in that said
6 sheets (2) have been made slightly curved, with a curvature ray
7 substantially greater than the curvature ray that will form the containing
8 cylinder.

9

10 20. A Container according to claim 1 and 18, characterized in that
11 between said holed joint edges (22) a seal is interposed (23).

12

13 21. A Container according to claim 1 and 18, characterized in that in
14 said holes (22) is inserted at least one means of screw discharge (251).

15

16 22. A Container according to claim 1 and 18, characterized in that said
17 cover (1) has for a substantially large plug (5) one cylindric upwards
18 prolongation element (51).

19

20 23. A Container according to claim 1 and 18, characterized in that the
21 said bottom (4) has a discharge hole (42).

22

23 24. A Container according to claim 1 and 18, characterized in that it
24 has some cylindrical bands for reinforcement (7).

25

26 25. A Container according to claim 1 and 18, characterized in that said
27 holed edges of said flexible sheet (2) is angled (21).

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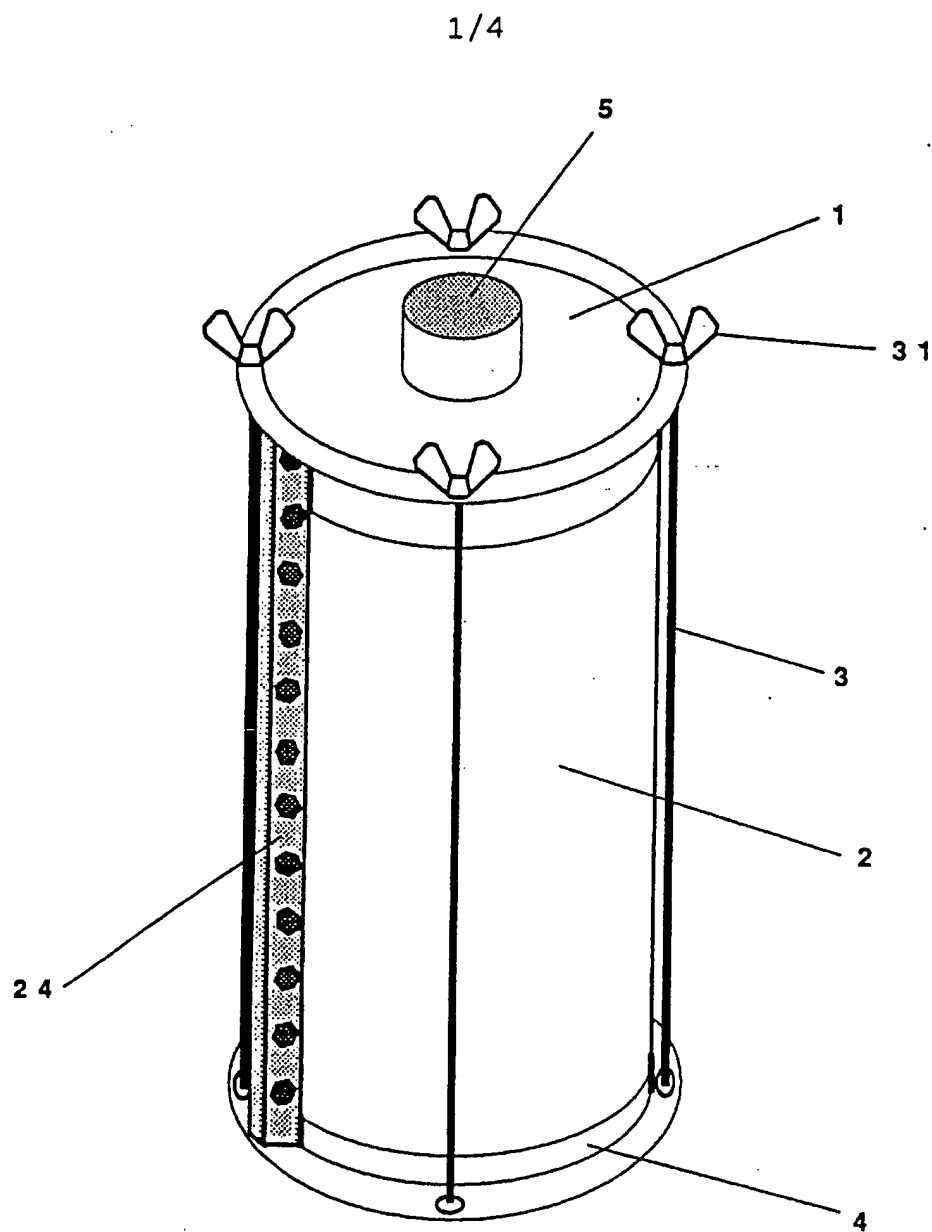
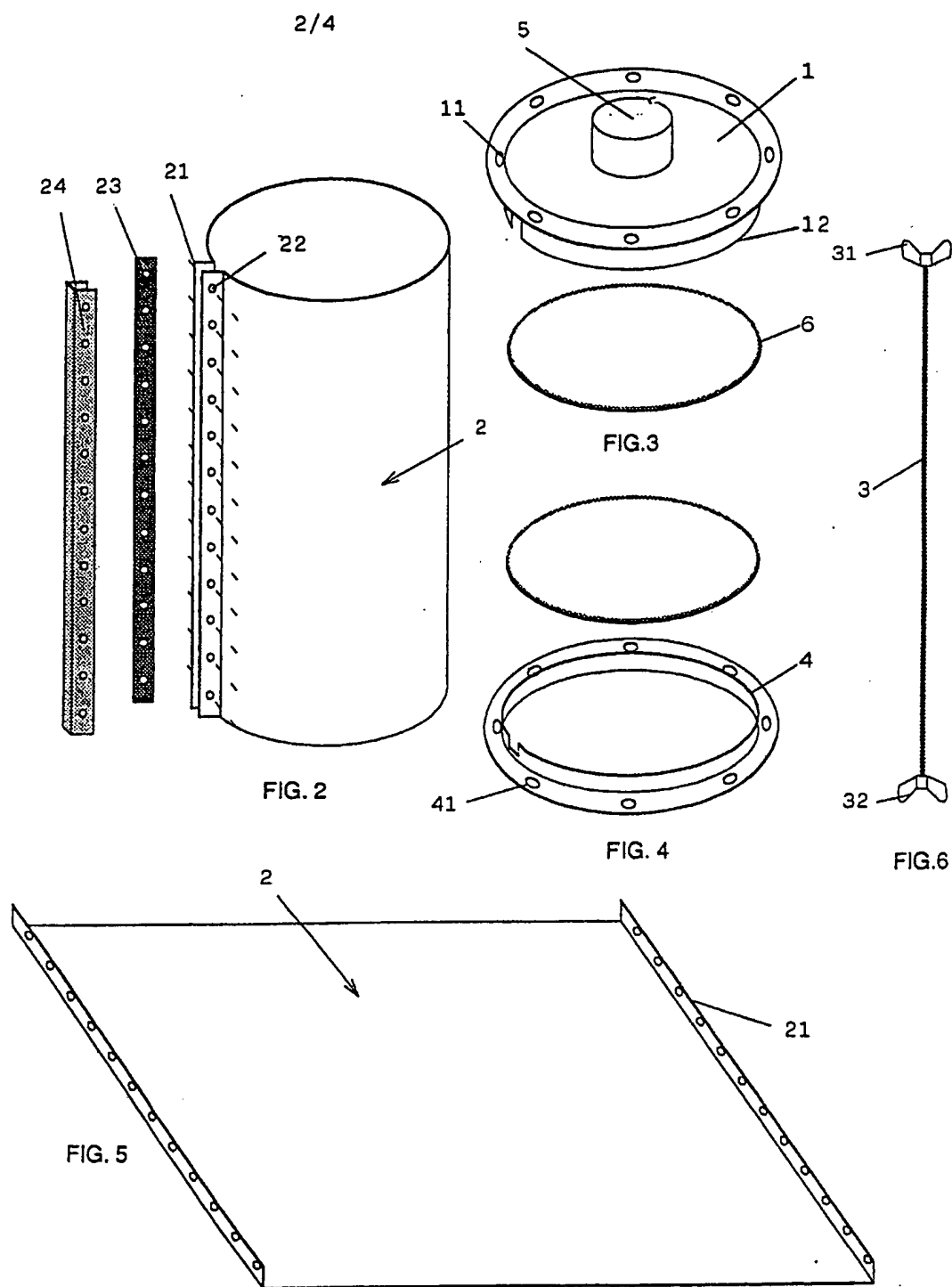


FIG. 1

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FIG.3

FIG. 4

FIG.6

FIG. 5

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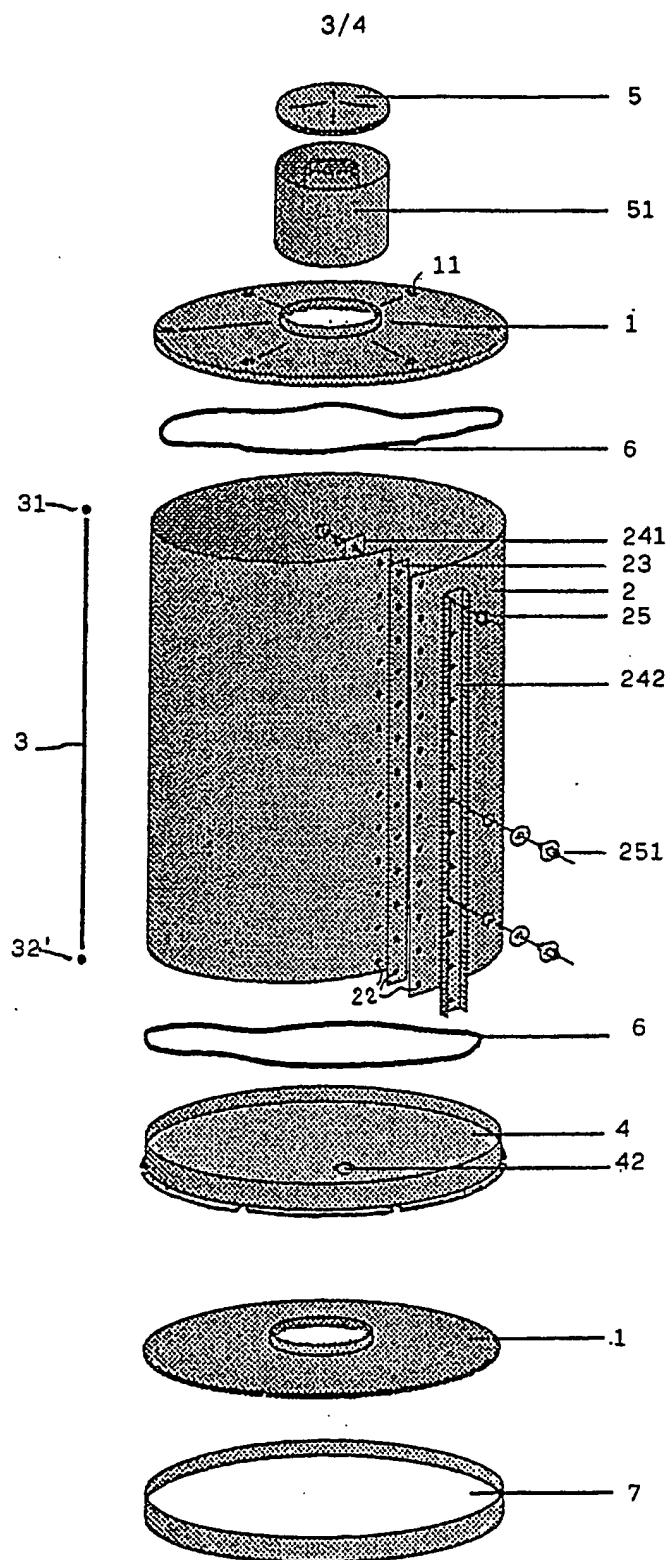


FIG. 1A

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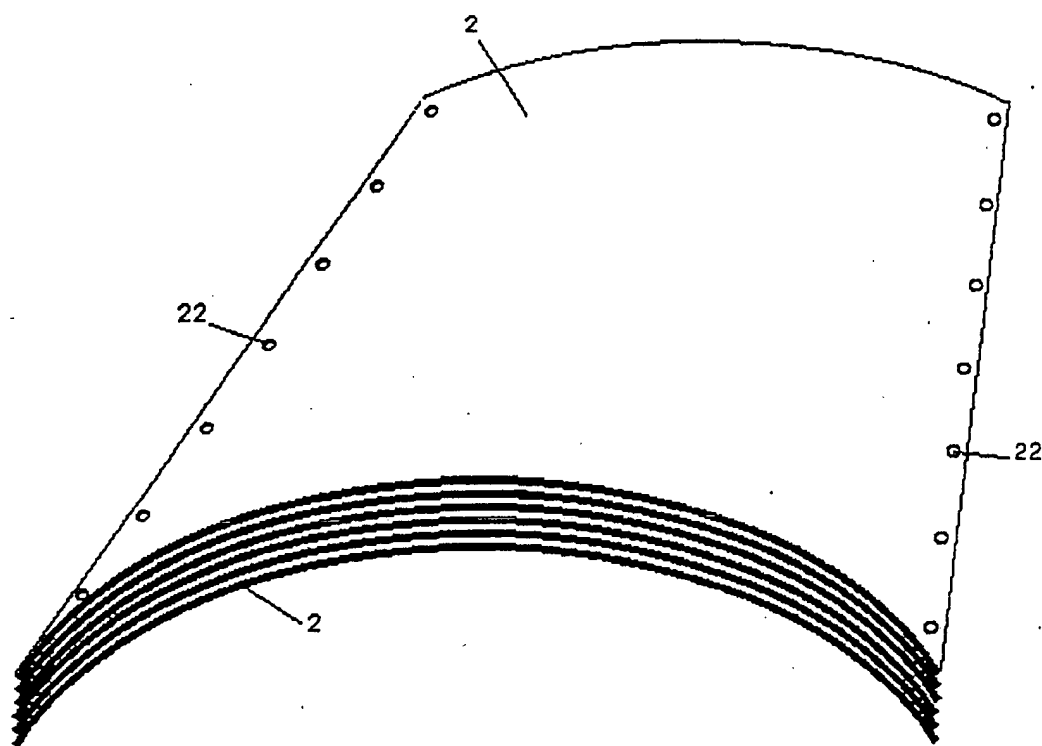


FIG. 2A

INTERNATIONAL SEARCH REPORT

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International Application No

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int.Cl. 5 B65D90/02; B65D8/04		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
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Int.Cl. 5	B65D	
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III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	US,A,1 923 716 (RICHARDSON CO) 22 August 1933	1,8,9
Y	see the whole document ---	2,5
X	AT,A,312 408 (LJUNGGRENS PAPPERSINDUSTRI AB) 15 November 1973 see page 2, line 33 - line 40 ---	1,10,14
Y	FR,A,1 406 022 (ERHARD JOOS) 16 July 1965 see page 1, right column, line 37 - page 2, left column, line 2; figure 3 ---	2
Y	DE,A,2 624 098 (BRIDGESTONE TIRE CO LTD) 9 December 1976 see page 12, paragraph 3 4 - page 13, paragraph 1; figure 9 -----	5
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IV. CERTIFICATION		
Date of the Actual Completion of the International Search 14 OCTOBER 1992		Date of Mailing of this International Search Report 02. 11. 92
International Searching Authority EUROPEAN PATENT OFFICE		Signature of Authorized Officer MARTIN A.G.M. <i>AMant</i>

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. EP 9201305 SA 61900

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		CA-A- 1034334	11-07-78
		GB-A- 1512477	01-06-78
		US-A- 4050605	27-09-77

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